

**REMARKS**

Claims 1-11 and 19-20 are currently pending in the application; claim 12 has been cancelled. Claim 1 has been amended to further define the invention by incorporating the limitations previously found in claim 12. Accordingly, no new matter is added by these amendments.

Applicants wish to thank the Examiner for indicating that the drawings are acceptable. Applicants also wish to thank the Examiner for removing the objections to claims 1, 9 and 10.

**Rejections Under 35 U.S.C. § 102(e) in view of Dai**

The Examiner has rejected claims 1-8, 11, 19-20 as allegedly anticipated by Dai (USPN 6,528,020). Although not agreeing with the propriety of the rejection, Applicants have amended claim 1 to further define the invention and include the limitations previously found in claim 12. As the Examiner notes, Dai does not teach a nanostructure sensor having passivation material covering regions in which there is electrical communication between the at least two conduction elements and the at least one nanostructure. Accordingly, the Dai reference cannot be said to anticipate amended independent claim 1 or its dependent claims, and the current rejection is moot.

**Rejections Under 35 U.S.C. § 103**

Claim 9 was rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Dai in view of Buckley (USPN 5,674,752). Applicants respectfully traverse this rejection. As discussed above, Dai does not teach Dai does not teach a nanostructure sensor having passivation material covering regions in which there is electrical communication between the at least two conduction elements and the at least one nanostructure. Buckley, even if it could properly be combined with Dai, does not reach the claimed invention.

Indeed, Buckley fails to disclose, teach or suggest in any form a sensor comprising nanostructures. In fact, considering the scale comparison in Figure 2 of Buckley, the disclosed fibers appear to have a diameter of 20 microns, *i.e.*,  $2 \times 10^4$  nanometers. Moreover, Buckley describes a fabric comprising a conventional weave of insulating fibers. Thus, the chemical sensors disclosed in Buckley employ certain fibers of a fabric of an article of clothing as a mechanical support of the “fabric chemical sensors,” which comprise layers of conductive polymers - as opposed to nanostructures - as active elements.

Claim 10 was rejected as allegedly obvious over Dai in view of McGill (USP 6,320,295). Applicants respectfully traverse this rejection. As describe above, Dai does not teach all of the claimed elements in independent claim 1. Moreover, McGill discloses making piezoelectrically-driven acoustic wave sensors having a smooth planar, active insulating surface on the order of  $4 \text{ cm}^2$ . (See, col. 7, lines 28-32.) The sensors disclosed in McGill are not nanostructures. In fact, the “chemoselective films” of McGill are described as simply having a mass effect on the resonant frequency of vibration of the underlying material. Accordingly, there is no suggestion in McGill of “electrical communication” with “conducting elements” because the SAW sensor of McGill does not use detection of electrical properties of either the “chemoselective films” or its underlying material. Thus, Applicants contend that because McGill fails to teach or suggest use of the cited materials as functionalization-associated nanostructures in a device having conductors in electrical communication with a nanostructure and, furthermore, does not teach the suitability of such materials as a functionalization layer in a sensor as disclosed in claim 10, the combination of Dai and McGill cannot be said to render claim 10 obvious, even if there were a suggestion or motivation to combine Dai and McGill, which there is not.

The rejection of claim 12 is rendered moot in light of the amendment to claim 1. Notwithstanding the amendment, the Gardner reference (USPN 6,111,280), even if it could be properly combined with Dai, does not render the amended claims obvious. More specifically, Gardner does not disclose, teach or suggest electrodes in electrical

communication with the molecular nanostructures. Nor does Gardner disclose, teach or suggest a nanostructure comprising a gate electrode (claim 11) or further comprising passivation material covering regions in which there is electrical communication between two conduction elements and the nanostructure (amended claim 1).

With respect to claim 6, Gardner does not disclose, teach or suggest a polymer layer on a nanostructure, as that term is understood and defined above. Indeed, Gardner at column 5, lines 22-30 states:

Alternatively the sensor may be formed by a MOSFET having a gate formed by the gas-sensitive layer and a thin gate oxide, as described more fully below. In this case, **the gas-sensitive layer may be made of organic material, such as a conductive polymer**, or inorganic conductive material, such as a metal oxide. When gas reacts with the gas-sensitive layer, the work function of the gas-sensitive layer changes, thereby modifying the threshold voltage and the transfer and output characteristics of the MOSFET. (emphasis added.)

Indeed, as defined in the USPC, nanostructures are known to possess special properties, functions and effects that are uniquely attributable to the structure's nanoscale physical size, which are not disclosed, taught or suggested by the polymer described in Gardner. Similarly, Gardner fails to disclose, teach or suggest a nanostructure sensor wherein the polymer layer comprises more than one material (claim 8).

**Conclusion**

For all the foregoing reasons, Applicants assert the claims are in condition for allowance. Favorable action on the merits of the claims is therefore earnestly solicited. If any issues remain, the Examiners is invited to contact Applicant's undersigned representative at (949) 760-9600. The Commissioner is hereby authorized to charge any additional fees that may be required to Deposit Account No. **50-2862**.

Respectfully submitted,  
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